Cerebral venous sinus thrombosis

- Cerebral venous sinus thrombosis as a complication of heparin-induced thrombocytopenia in myasthenia gravis: A rare and complex case
- Role of Magnetic Resonance Venography in the Evaluation of Cerebral Veins and Sinuses Occlusion
- Efficacy and Safety of Thrombolysis for Pediatric Venous Thromboembolism: A Systematic Review and Meta-analysis
- Anesthetic and perioperative management of pregnant patients undergoing neurosurgery: a case series from a single center in Morocco (2017-2024)
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- From Skin to Sinus: A Rare Case of Cerebral Venous Sinus Thrombosis Caused by Occipital Subcutaneous Abscess
- Are isolated linear fractures over major dural venous sinuses a risk factor for sinus thrombosis in mild TBI?
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Cerebral venous sinus thrombosis (CVST) is the presence of thrombosis in the dural venous sinuses.

There are several other terms for the condition, such as cerebral venous and sinus thrombosis, (superior) sagittal sinus thrombosis, dural sinus thrombosis, intracranial venous thrombosis, and the older term cerebral thrombophlebitis.

see Dural venous sinus thrombosis.

Epidemiology

The incidence of cerebral venous thrombosis (CVT) varies between studies, but it is estimated to be between 2 and 5 per million per year. A recent study in the Netherlands with comprehensive ascertainment suggested a much higher incidence. It is uncertain whether these differing estimates reflect the quality of ascertainment or true variation.

Devasagayam et al., retrospectively identified CVT International Classification of Diseases-coded cases from all Adelaide public hospitals from 2005 to 2011. They also searched all neuroimaging studies (259 101) from these hospitals for text variations containing venous thromb. All potential cases were reviewed, and cases of incident CVT ascertained. Associations and outcomes were determined.

Of 169 possible cases, 105 cases of CVT were confirmed (59 cases by both coding and neuroimaging, 40 from neuroimaging alone, and 6 from coding alone). In a population of 953 390 adults, this represented an incidence of 15.7 million per year (95% confidence interval, 12.9-19.0), the highest incidence reported. Of these cases, a possible procoagulant predisposition was identified in 48%. Fifty-five of 105 cases occurred in females. Relative risk of CVT in females of reproductive age was insignificantly higher than in males (1.18 [95% confidence interval, 0.94-1.48]).

Cerebral venous sinus thrombosis in the study was more common than previously reported, perhaps because of more complete ascertainment. Future CVT incidence studies should include comprehensive capture and review of neuroimaging [1)].

Superior sagittal sinus thrombosis is the most common type of dural venous sinus thrombosis and is potentially devastating.

Etiology

Cerebral venous sinus thrombosis Etiology

Pathogenesis

see Cerebral Venous Sinus Thrombosis Pathogenesis.

Pathophysiology

see Cerebral Venous Sinus Thrombosis Pathophysiology.

Clinical

Cerebral venous thrombosis (CVT) is a rare cerebrovascular accident that can present with headache, seizure, and focal neurological deficits. Approximately 30%-40% of patients with CVT also present with intracranial hemorrhage.

Diagnosis

Given that there is usually an underlying cause for the disease, tests may be performed to look for these.

see Cerebral venous sinus thrombosis diagnosis.

Treatment

see Cerebral venous sinus thrombosis treatment.

Outcome

Cerebral venous sinus thrombosis outcome.

Prospective cohort studies

Aaron et al. reported long-term outcomes of patients with CVT treated by decompressive neurosurgery in an international cohort.

DECOMPRESS2 (Decompressive Surgery for Patients With Cerebral Venous Thrombosis, Part 2) was a prospective, international cohort study. Consecutive patients with CVT treated by decompressive neurosurgery were evaluated at admission, discharge, 6 months, and 12 months. The primary outcome was death or severe disability (modified Rankin Scale scores, 5-6) at 12 months. The secondary outcomes included patient and caregiver opinions on the benefits of surgery. The association between baseline variables before surgery and the primary outcome was assessed by multivariable logistic regression.

A total of 118 patients (80 women; median age, 38 years) were included from 15 centers in 10 countries from December 2011 to December 2019. Surgery (115 craniectomies and 37 hematoma evacuations) was performed within a median of 1 day after diagnosis. At last assessment before surgery, 68 (57.6%) patients were comatose, fixed dilated pupils were found unilaterally in 27 (22.9%) and bilaterally in 9 (7.6%). Twelve-month follow-up data were available for 113 (95.8%) patients. Forty-six (39%) patients were dead or severely disabled (modified Rankin Scale scores, 5-6), of whom 40 (33.9%) patients had died. Forty-two (35.6%) patients were independent (modified Rankin Scale scores, 0-2). Coma (odds ratio, 2.39 [95% CI, 1.03-5.56]) and fixed dilated pupil (odds ratio, 2.22 [95% CI, 0.90-4.92]) were predictors of death or severe disability. Of the survivors, 56 (78.9%) patients and 61 (87.1%) caregivers expressed a positive opinion on surgery.

Two-thirds of patients with severe CVT were alive and more than one-third were independent 1 year after decompressive surgery. Among survivors, surgery was judged as worthwhile by 4 out of 5 patients and caregivers. These results support the recommendation to perform decompressive neurosurgery in patients with CVT with impending brain herniation [2)].

Case series

2016

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incidence reported. Of these cases, a possible procoagulant predisposition was identified in 48%. Fifty-five of 105 cases occurred in females. Relative risk of CVT in females of reproductive age was insignificantly higher than in males (1.18 [95% confidence interval, 0.94-1.48]).

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Three consecutive patients treated with heparin who suffered both clinical and radiographic deterioration, and went on to have endovascular therapy. Each patient was successfully recanalized by placing a 0.027-inch microcatheter at the proximal portion of the thrombus and infusing 20 mg of alteplase dissolved in 1 liter of normal saline infused at 100 ml per hour for an infusion of 2 mg of alteplase per hour for ten hours [4].

Monocentric cohort of 41 consecutive CVT admitted in a French ICU tertiary hospital (National Referent Center for CVT). Data collected are as follows: demographic data, clinical course, incidence of craniectomy and/or endovascular procedures and outcome in ICU, after 3 and 12 months.

47 years old (IQ 26-53), with 73.2 % were female, having a SAPS II 41 (32-45), GCS 7 (5-8), and at least one episode of mydriasis in 48.8 %. Thrombosis location was 80.5 % in lateral sinus and 53.7 % in superior sagittal sinus; intracranial hematoma was present in 78.0 %, signs of intracranial hypertension in 60.9 %, cerebral edema in 58.5 % and venous ischemia in 43.9 %. All patients received heparin therapy, and 9 cases had endovascular treatment (21.9 %); osmotherapy (53.7 %) and decompressive craniectomy (16 cases, 39 %) necessary to control intracranial hypertension. Ten patients/41 (24.4 %) died in ICU and 18/31 (58.1 %) were discharged from ICU with outcome 0-3 of mRS. After 12 months, 92 % of survivors (23/25) had a mRS between 0 and 3. The proportion of death was 31.7 % at 1 year.

The large proportion of acceptable outcome in survivors, which continue to functionally improve after 1 year, motivates the hospitalization in ICU for severe CVT. For similar CVT severity, craniectomy did not improve outcome in comparison with the absence of craniectomy [5].

2015

In 332 patients with CVT, 33 (10 %) presented with subarachnoid hemorrhage SAH, associated in 11 cases with hemorrhagic infarct or intracerebral hemorrhage.

22 cases of CVT presenting as SAH in the absence of hemorrhagic brain lesion. Diagnosis of sinus thrombosis was established on T2* and magnetic resonance venography and that of CoVT on T2* sequence. Diagnostic of SAH was based on fluid-attenuated inversion recovery (FLAIR) sequence.

CVT involved lateral sinus in 18 patients, superior sagittal sinus in 16, and straight sinus in 1. Cortical veins were involved in all patients, in continuity with dural sinus thrombosis when present. SAH was circumscribed to few sulci in all cases and mainly localized at the convexity (21 cases). CoVT implied different areas on the same side in four patients and was bilateral in seven. There was no perimesencephalic or basal cisterns hemorrhage. Cortical swelling was present in 12 cases,

associated with localized edema. All patients except one had a favorable outcome.

This report shows that the incidence of CVT presenting as isolated SAH is evaluated to 6.4 % and that SAH is, in all cases, in the vicinity of CoVT and when dural thrombosis is present in continuity with it [6].

Case reports

Cerebral venous sinus thrombosis case reports.

[1], [3]
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